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ABSTRACT

This project was designed to develop and validate a communication package on the use of incentives in education. The package, which is directed toward elementary and middle school teachers and administrators contains discussions of the following: theoretical rationales underlying the use of incentives; types of incentives; target populations for incentives; modes of incentive delivery; and criterion measures for determining incentive awards. The discussions are annotated with references to a large body of research literature. Successful as well as unsuccessful incentives are referenced. Slide/tape presentations were produced in areas related to practical applications of educational incentives. Such presentations may serve a training function as well as an assistance to school administrators in surmounting public misunderstanding about incentives. (WS/Author)

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Final Report

Contract No. OEG-0-72-4331

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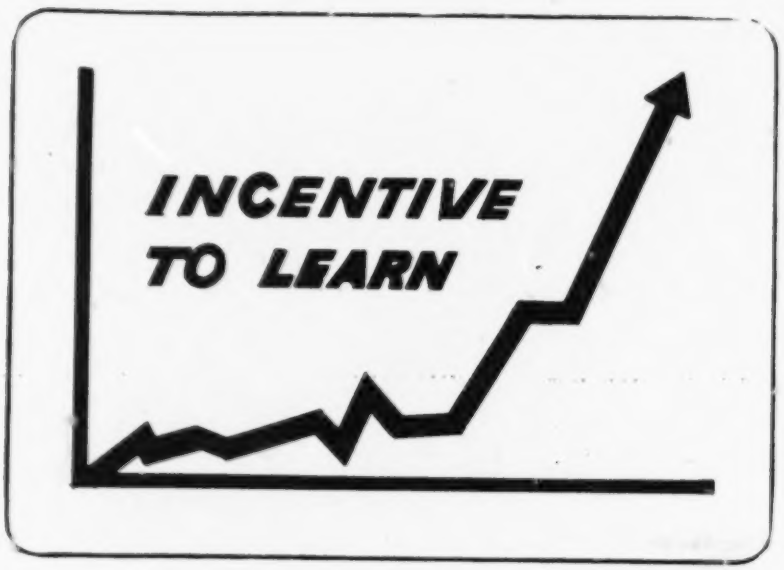

Dewey Lipe
Robert A. Weisgerber
Karen F. A. Fox

with the assistance of:

Elizabeth A. Reid
Ron Stout
Jurgen M. Wolff

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American Institutes for Research
in the Behavioral Sciences

Palo Alto, California

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for Educational Communication
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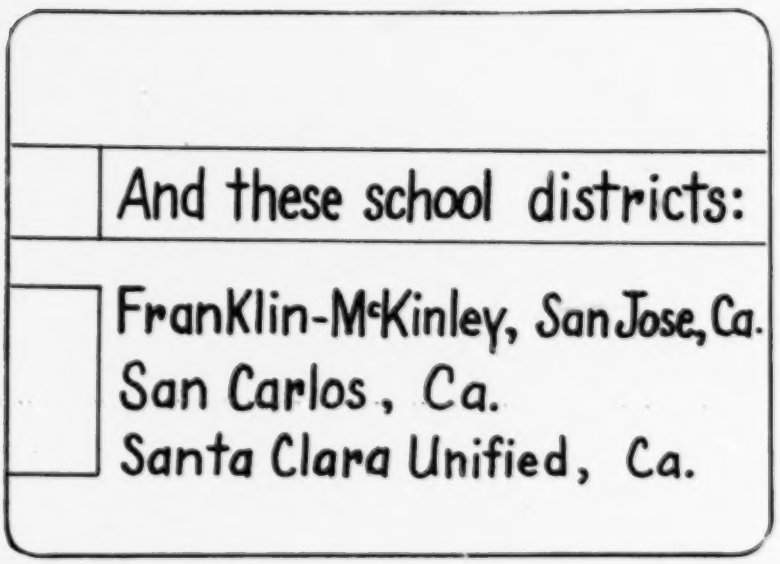
And these school districts:
FranKlin-McKinley, San Jose, Ca.
San Carlos, Ca.
Santa Clara Unified, Ca.

ABSTRACT

The primary goal of this project was the development and empirical validation of a communication package on the use of incentives in education. The package is directed toward elementary and middle school teachers and administrators. It contains discussions of theoretical rationales underlying the use of incentives, types of incentives, target populations for incentives, modes of incentive delivery, and criterion measures for determining incentive awards. The discussions are annotated with references to a large body of research literature as well as the results of on-going but as yet unreported work. Successful as well as unsuccessful incentive applications are referenced. Slide/tape presentations were produced in areas related to practical applications of educational incentives. In addition to serving a training function, such presentations may assist school administrators in surmounting public misunderstanding about incentives.

Recent highly publicized events, such as the OEO National Performance Contracting Study and the demand for "accountability" in education, have aroused considerable interest in the topic of educational incentives. The survival of incentive applications as viable practice depends partly on dissemination of accurate information to practitioners in the field. The targeted communication package is intended to serve such dissemination needs.

ACKNOWLEDGMENTS

Special credits go to the diversely talented individuals who contributed o this project. Bob Weisgerber was instrumental in organizing the slide/tape presentation in story-board form, writing the narration for the tape presentation, and photographing all of the drawings and classroom scenes in the slide presentation. Karen Fox had major responsibility for the Incentive Resource Guide. Elizabeth Reid read and abstracted a major portion of the recent literature (1970 to present). Ron Stout was the artist for both the colored drawings of the slide presentation and the black and white drawings in the Presenter's Manual and Initial Training booklets. Jurgen Wolff designed the format of the Incentive's Resource Guide and the "Certificate of Accomplishment." Ross Forbes, announcer on a local radio station, narrated the presentation.

Also deserving of special credits are the teachers and students of Agnew School in Santa Clara, California, and Central School in San Carlos, California, for providing excellent examples of incentives in actual operation in schools. And, our thanks to Franklin-McKinley School District teachers and administrators for their assistance in field testing the package. Dan Meyerson, consultant, provided invaluable suggestions for making this presentation useful in a very practical way. Our appreciation goes also to the teachers of Slater School in Mountain View, California, where Dr. Meyerson serves as Principal, for their additional suggested improvements for the package.

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Appendix A: Sample Abstract

Appendix B: Certificate of Accomplishment

THE PROBLEM AREA

There is ample evidence from the experimental analysis of human behavior (e.g., Ulrich et al., 1966) to suggest that judicious applications of reinforcements can effectively alter the frequency and form of children's classroom behavior. The influence of reinforcement techniques on measured achievement, however, is by no means as well demonstrated. The purpose of this targeted communication project was to assemble the evidence from reinforcement literature relevant to school achievement and present it to teachers in a form that they can readily apply to their everyday teaching practice.

Reinforcement is typically conceptualized as a two-by-two matrix as follows:

	Reward	Punishment
Presented	1	2
Withheld	3	4

All four cells are relevant to school learning; however, the research pertaining to incentives in school learning is presented in cell number 1. A recent review of research evidence (Lipe & Jung, 1971) attempted to summarize the diverse findings bearing on this issue.

Lipe and Jung (1971) defined an incentive as an identifiable and attainable consequence of behavior which acts to guide the future form and frequency of that behavior. An example would be a carrot dangling in front of a donkey which is harnessed to a cart. A significant body of research evidence (Premack, 1970) has been generated to support the hypothesis that incentives are not absolute but rather relative to the current state and past history of an individual. This poses thorny problems to the theoretician attempting to identify the basic nature of events which possess incentive qualities. However, considerable progress has recently been made in surmounting this problem in applied educational situations. In

essence, progress has resulted from the realization that children possess considerable awareness about what events will "motivate" them in any given situation. Addison and Homme (1966) introduced the concept of the reinforcing event (RE) menu into contemporary awareness as a convenient method for converting potential reinforcing events into incentives which have the power to increase the quality and frequency of desired student behaviors. With the RE menu an individual is allowed to select from a number of events which are potential incentives for him in a given educational situation.

In formulating such a menu, it is most productive to begin with a number of discrete events which have a high probability of serving as functional incentives, yet are feasible and practical within existing educational constraints. Probability levels are ascertained using an amalgamation of common sense, past experience, past research evidence, observation, and structured data collection. Observation and data collection efforts usually involve attempts to determine, within the bounds of regulations and morality, what "turns on" a representative sample of the student population. Existing evidence suggests that such intrinsic events as knowledge of personal success, opportunity for self-direction, peer or authority figure approval, etc., may serve as well as extrinsic rewards.

The problem of identifying <u>functional</u> incentives is often secondary to that of implementing an incentive delivery system in an on-going classroom situation. Required are three components which, when taken together with the RE menu, define an "incentive-management system" for educational applications.

The first component is a set of educational objectives which roughly define the content to be acquired by the student population. Educational objectives may be written at several levels of specificity, but at the lowest level they should include statements of learner performance outcomes suitable to external evaluation of attainment. This implies statements of conditions and criteria associated as intrinsic parts of the objectives (Mager, 1962). Such a set of objectives provides a basis for setting minimum acceptable entry levels for

students with respect to the given educational program. It also provides a basis for individualizing the course, in that children often exhibit marked individual differences in the rate and degree to which they are able to progress through the set, demonstrating competency as required by interim objectives.

The second component is a set of evaluation criteria and performance standards based on the objectives specified in the first component. These provide an operational basis for guiding a student through the course and, consequently, for awarding events which have been previously selected as incentives. It is critical that such procedures bear a directly congruent relationship to the important course objectives, and that they be reliable (free from random error), not unduly complex, and capable of fairly immediate interpretation by both teacher and student (Jung, 1971).

The third component is a method for earning and delivering incentives contingent upon the attainment of course objectives (component one) as determined by the course evaluation criteria (component two). It is generally the case that a good deal of intensive study, representing thousands of individual learning trials, is required to master a typical set of course objectives. The optimal method for earning rewards, then, is one which provides the incentive for a sequence of learning trials without interrupting the sequence. One procedure which has been successfully used over the past decade to meet this need is the token system (Staats, Staats, Schutz, & Wolf, 1962). Literally hundreds of examples of token systems have been adapted to meet the unique needs of various educational programs. One of the advantages of such a system is that it allows a large enough range of reinforcing events to be earned to meet the preferences of a diverse student population; in this way, a token system operates extremely well in tandem with an RE menu since each individual in the population may earn the incentives he selects for himself. Another advantage of the token system is that it allows more highly valued events to be earned at a cost more dear in terms of tokens required. This

allows a "correlated reinforcement" situation (Logan, 1970), in which more stringent levels of performance may be required in order to earn more valued rewards.

Some recent research (Cassileth, 1969) indicates that the most likely problems to be encountered in instituting an incentive-management system with an existing educational program will be in components one and two. This is to say that unless provisions exist within the program for measuring and accommodating individual student increases in rate and quality of academic performance brought about by increased incentive, little overall benefit will accrue. Unless these two components (objectives and evaluation techniques) have been addressed beforehand, there is every reason to expect that the problems of designing an effective incentive-management system will be insurmountable.

In this project a communication package on the use of incentives in education was developed and tested. The package was targeted for elementary and middle school teachers and administrators. Specific training objectives were constructed and stated as desired outcomes which would result from going through the package. Two development "cycles" were carried out to insure that members of the intended audience could, in fact, perform to desired specifications. Objectives were included for the following areas: ability to describe the most important theoretical and empirical rationales underlying the use of educational incentives as applied to academic learning; ability to list and describe types of educational incentives which have been demonstrated effective (or ineffective) in previous studies; ability to describe various modes of delivering incentives to students as individuals and/or groups; and, finally, ability to describe and cite examples of both course objectives and criterion measures appropriate for guiding and determining incentive awards. In the latter area, where past experience indicates most problems would be encountered, special suggestions were included to allow teachers and administrators to select (as opposed to construct) educational objectives and measurement procedures, so as to simplify the communication package as much as possible.

The communication package consists of explanatory prose "learning units," simulation opportunities to encourage the application of what is learned, and self-evaluation exercises designed to provide feedback on both concepts mastered and sources for further reading on concepts not mastered. Also included in the package is a simple incentive system in which the participating teachers and administrators themselves may earn points for satisfactory achievement of the objectives of the training package. A slide/tape presentation was compiled to accompany prose learning units. These media presentations provide visual suggestions and examples of practical incentive applications; they were designed to serve the dual purpose of training teachers and administrators as well as providing a tool for them in explaining incentive techniques to audiences such as school boards and parents.

RESEARCH BASE

Behavior modification is a recently mushrooming field within the behavioral sciences. Psychology Today identified 42 leading "behavior shapers" and 16 major centers across the country extending from Cambridge to Honolulu and from Seattle to Tallahassee. Obviously a vast storehouse of principles and techniques of behavior modification has accumulated as a result of these major research and development enterprises.

Because learning involves behavior change on some dimension, virtually none of the behavior modification literature is totally unrelated to school learning. The approach of this project was to survey a wide range of sources. The following journals were consulted from 1965 to the present:

American Educational Research Journal
Annual Review of Psychology
Behaviour Research and Therapy
Child Development
Exceptional Children
Journal of Applied Behavior Analysis
Journal of Behavior Therapy and Experimental Psychiatry

Journal of Educational Psychology
Journal of Educational Research
Journal of Experimental Analysis of Behavior
Journal of Experimental Child Psychology
Journal of Experimental Education
Psychology Abstracts
Psychology in the Schools
Psychology Today
Review of Educational Research

In addition, a comprehensive search was made through the ERIC system and relevant reports were identified. Problem identifiers included were:

Performance Contracting
Accountability
Token Economy
Positive Reinforcement
Punishment
Contingency Management
Operant Learning (control)
Behavioral Objectives
Imitation or Modeling
Generalization of effect
Incentives
(Achievement incentives)
(Material incentives)
(Social incentives)

In order to secure more up-to-date information on educational research projects recently completed or in progress, the staff contacted Science Information Exchange, from which it received abstracts. Complete reports were obtained from those which were felt to be most pertinent. A final major source of literature reviewed was papers presented at various conferences. Relevant papers were requested from the 1970 and 1971 American Psychological Association meeting, American Educational Research Association meeting, and the regional Psychological Association meetings.

It is often the case that references to effective educational techniques with great potential for dissemination do not appear for years after their authors have prepared them for publication. For this reason, the authors of this report have visited and documented the incentive procedures being utilized in several major programs around the country. Detailed information was obtained for the following programs:

APSTRAT (Aptitude Strategies), Human Resources Research Organization, Alexandria, Virginia

Behavior Analysis Follow Through Program, Department of Human Development, University of Kansas, Lawrence, Kansas

Behaviorally Engineered Environments, Upper Midwest Regional Laboratory, Minneapolis, Minnesota

CASE (Contingencies Applicable to Special Education), Institute for Behavioral Research, Silver Spring, Maryland

Juniper Gardens Project, Kansas City, Kansas

Learning Intervention Systems, Mountain View, California

The Learning Village, Kalamazoo Valley Intermediate School District and Western Michigan University, Kalamazoo, Michigan

Englemann-Becker Follow Through Program, Department of Child Development and Special Education, University of Oregon, Eugene, Oregon

First Year Communications Skills Program, Southwest Regional Laboratory for Educational Research and Development, Inglewood, California

Staats Motivation-Activating Reading Technique, University of Hawaii

In all, 171 articles were abstracted on 8-inch by 10-inch E-Z Sort punched cards. These cards were coded and punched according to the scheme shown in Table 1. Research articles were summarized according to dependent variables; design; independent variables including a description of the reinforcing agent, reinforcers, setting, and method; experimental monitoring; results; and conclusions. Experimental monitoring refers to those procedures employed in the research study to insure that the behavior modification treatment conditions were strictly followed. A sample abstract is presented in Appendix A. As shown in Appendix A, the problem identifiers, numbers 33 to 56 on Table 1, were coded under the bibliographic information on the abstract. In the upper left hand corner, the codes for other identifying information were also written after Roman Numerals I through VIII corresponding to those Roman Numerals in Table 1. All of these code numbers plus the first initial and first two letters of the author's last name were edge punched on the E-Z Sort card. Thus, for quick retrieval, an ice-pick-like device

Table 1

Major Categories for EZ Sort Literature Retrieval File

I Type of article
- 1 Experimental
- 2 Theoretical

II Design
- 3 Single organism
- 4 Experimental and control groups

III Setting
- 5 School
- 6 Laboratory
- 7 Home
- 8 Institution

IV Subjects
- 9 Normal middle class
- 10 Culturally disadvantaged
- 11 Disruptive behavior problems
- 12 Other special education

V Grade levels
- 13 Grades 1-3 (incl. pre-school)
- 14 Grades 4-6
- 15 Grades 7-9
- 16 Grades 10-12 (incl. college)

VI Target behaviors
- 17 Mathematics
- 18 Reading
- 19 Other academic behaviors
- 20 Social behavior

VII Reinforcing agent
- 21 Teacher
- 22 Experimenter
- 23 Peer
- 24 Other

VIII Target populations

Individual incentive placement
- 25 Teacher
- 26 Student
- 27 Parent
- 28 Peer

Group incentive placement
- 29 Teacher
- 30 Student
- 31 Parent
- 32 Peer

Problem Identifiers

Types of incentives
- 33 Material
- 34 Social
- 35 Knowledge of results
- 36 Secondary reinforcement
- 37 Vicarious reinforcement (& modeling)
- 38 Aversive
- 39 High vs low probability responses
- 40 Self-management of responses

Modes of incentive delivery
- 41 Direct, personal
- 42 Mechanical devices
- 43 Non-delivery of positive incentives
- 44 Token economies
- 45 Performance contracts
- 46 Reinforcement menu
- 47 Self-delivery

Timing of reinforcement
- 48 Immediate
- 49 Delayed
- 50 Continuous
- 51 Fixed (interval or ratio)
- 52 Variable (interval or ratio)

Criterion measures
- 53 Specific behaviors
- 54 Standardized tests
- 55 Criterion-referenced tests
- 56 Teacher or experimenter constructed test

Author Coding (alpha field A-Z)

first name initial--inner row
first and third last name letter--outer row

could be inserted through the deck of abstract cards at a particular code number. Those cards with that particular hole punched out then fall out of the deck when the deck is suspended from the ice-pick device.

THE COMMUNICATION PACKAGE

The first step in designing the targeted communication package was to select the kinds of information from the research and development literature that would be directly pertinent to teachers and administrators at the elementary and middle school levels. An outline for the teacher package was written and iterated through several drafts until a version evolved which was judged to cover the main questions and problems that might confront a teacher who is implementing an incentive program in the classroom. That outline is presented in Table 2. The outline for the administrators package was designed from a different point of view. Its function is to inform administrators about the information package for teachers and to explain its purpose and how it might be used. This package may best be described as a brochure. The outline is presented in Table 3.

The next step was to design the slide/tape presentation. The approach used was to construct a "story board" (Weisgerber, 1963) from the outline in Table 2. The "story board" consists of a separate page for each slide with the information to be communicated stated at the top, a rough drawing of the slide picture and the narration for the picture printed underneath. The story board was, of course, revised several times. The final version, then, became the body of the Presenter's Manual, Part I.

The background information, discussion of objectives, and the planning steps of an incentive system are depicted in artist's drawings in Units 1, 2 and 3 of Part I. The examples of incentive systems in operation in schools are presented as a series of photographs taken in the actual classrooms where they are operating.

Table 2

Outline of Information Package

For Teachers

I. What is an incentive system?
   A. Definition and rationale
   B. Implications for students
   C. Some examples

II. Possible objectives of a specially designed incentive system
   A. Increase academic achievement of students
      1. Reading
      2. Mathematics
      3. Other
   B. Improve study skills
   C. Develop students' personal and social skills
   D. Reduce classroom management problems
   E. Enhance the process of innovative change

III. Planning an incentive system
   A. Designate the target students
   B. Specify desired outcome behaviors
   C. Determine the measurement approach to be used
      1. Testing
      2. Observing
   D. Identify feasible incentives
      1. Student privileges
         a. Frequently occurring choice behaviors
         b. Free choice responses
      2. External incentives
         a. Material incentives
         b. Social incentives
         c. Knowledge of results
         d. Certificates, tokens, and stars

Table 3

Outline of Information Package

For Administrators

I. What is an incentive system?

II. Points to consider in deciding whether or not to implement an incentive system

- A. Need
- B. Climate for acceptance
- C. Cost

III. Determining the scope of the incentive system

- A. Whole district
- B. School
- C. Classroom
- D. Students
- E. Parents

IV. Initiating an incentive system

- A. Approaches
  1. A "hot" new idea
  2. Enthusiastic expert as consultant
  3. Field trip; visit a successful program
  4. The best alternative program to meet assessed needs
  5. Performance contract (Accountability Model)
     - a. With teachers' association or union
     - b. With individual teachers
- B. Training
  1. Training package
  2. Supplementary approaches
     - a. Workshop
     - b. Field-trip
     - c. In-service training
     - d. Resource library

V. Evaluation: Fine-tuning the process

The information package for teachers is in five separate booklets plus the slides and audio tapes. It is presented to the teachers in two slide/tape presentations (Part I and Part II) and an Incentive Resource Guide.

Incentive to Learn, Part I

Part I includes a 20-minute slide/tape presentation in five units with each unit followed by a set of exercises to be completed by the participating teachers. The exercises take about five minutes each so that the entire presentation may be completed in 45-60 minutes.

The Presenter's Manual, Part I describes the components of the program and the presenter's role. Each color slide is shown in black and white in the Presenter's Manual and the audio taped narration for each slide is printed under the slide. Given above the picture of each slide in the Presenter's Manual is the rationale for that slide and the message it is intended to communicate.

Every teacher or other staff person attending a training session would be given an Initial Training, Part I booklet. The black and white drawings of each slide plus the printed narration are identical to the Presenter's Manual. Above each picture in the Initial Training booklet, however, is a comment or a question to be answered. The questions for each unit are answered by the participants when the slide/tape presentation is stopped at the end of each unit. The participants immediately score their own responses from the key at the end of the Initial Training booklet and give themselves one point for each correct answer.

The purposes of the initial training exercises are to enhance learning through review and active participation and to provide participants with first hand involvement in a simple point incentive system. At the end of Part I, all participants who earn 35 points out of a possible 48 are given a "Certificate of Accomplishment" signed by the school principal and the program presenter. See Appendix B for a copy of the certificate.

Incentive to Learn, Part II

Part II would normally be presented in a separate session but within a week of the Part I presentation. It begins with a seven-minute, uninterrupted slide/tape presentation followed by planning session. The slide/tape presentation reviews some of the main points from Part I and also presents some examples of incentives in order to stimulate ideas.

During the planning session the participants follow a procedural outline in planning an incentive program appropriate to their own unique classes. They first identify and write down the names of target students, then specify whether the objectives for each target student would be for academia, classroom management or personal and social outcomes. They would write two or three specific objectives plus items or other procedures for measuring the achievement of those objectives. Finally, they would list some possible incentives and then plan a delivery system.

An evaluation form is included at the end of the Initial Training, Part II booklet for use at the presenter's discretion.

Incentive Resource Guide

The Incentive Resource Guide is designed to be a handy, quick reference for answers to specific, practical questions that are likely to arise during the process of planning and implementing an incentive system. Those answers are provided from the practical experiences reported in the research literature. The Incentive Resource Guide covers such questions as, "What kinds of school behavior can be changed through incentive systems?" "How do you select objectives for an incentive system?" "How do you select feasible and effective incentives?" The Guide also describes three incentive programs in detail and provides an annotated list of other resources.

Field Trial

The field trial was conducted at Franklin-McKinley School District in San Jose, California. A notice describing the program was sent out to principals in the five elementary schools and one junior high school in the district. About 16 teachers signed up.

At the end of the Part I presentation, each participant was asked to fill out an evaluation form and eleven completed or partially completed forms were returned. Results are presented in Table 4.

Comments from the second page of the evaluation form were varied with little in the way of trends to guide revision. Three persons selected the part about objectives as the most helpful aspect and two persons stated that the definition of incentives was most helpful to them. Several persons stated that they were already very familiar with incentive principles and found little that was new to them in the program. One particularly valuable suggestion was to use a less shrill tone on the audio tape to signal the change of slides at the end of each narration. The original signal was made by tapping a metal object against a heavy glass vase. As a result of this suggestion, all of the gongs were replaced by an electronic tone.

Seven persons attended Part II presentation. The ratings of Part II are presented in Table 5.

In the comments section of the Part II Evaluation Form, three persons stated they liked the Incentive Resource Guide best and two preferred the planning session. No "least preferred" aspects of the presentation were written. Suggestions for changing the program included the following:

- Have a discussion period following each training program.
- Follow up later--after we have tried incentives in our classrooms to discuss success and/or problems.

Table 4

Part I Evaluation Results

In order to improve this training program, we would very much appreciate receiving your evaluation of the program and any comments you may have. On this page, please rate each segment of this training program and on the next page, please add your comments.

	Excellent 1	Good 2	Fair 3	Mediocre 4	Poor 5	Average Rating
Initial Training, Part I						
Introduction to Incentives	1	2	3	4	5	2.1
Possible Objectives for an Incentive Program	1	2	3	4	5	2.1
Planning an Incentive Program	1	2	3	4	5	2.4
Implementing an Incentive Program	1	2	3	4	5	2.1
Potential Consequences to Consider	1	2	3	4	5	2.1
OVERALL RATING OF PART I	1	2	3	4	5	2.2
Components						
Slides	1	2	3	4	5	1.7
Narration	1	2	3	4	5	1.9
Exercises in Part I	1	2	3	4	5	2.3
Experience of Earning Points for a Certificate	1	2	3	4	5	2.0

Table 5

Part II Evaluation Results

1 = Excellent

2 = Good

3 = Fair

4 = Mediocre

5 = Poor

	Mean Rating
Initital Training, Part II	
Slide/Tape Samples of Incentives	2.8
Planning Session	2.6
OVERALL RATING OF PART II	2.8
Components	
Slides	2.2
Narration	2.3
Incentive Resource Guide	2.0

- Provide more idea type things to take back to our classrooms -- specifics.
- More needs to be done on underachievers in junior high.

The field trial, however, did not end at Franklin-McKinley School District. One of the principals attending the field trial asked to use the slide/tape presentation at an all-day in-service training session for his school teachers. Dr. Dan Meyerson, who served as consultant to this project, asked to use the presentation to orient new teachers in his school to behavior modification concepts and practices. Mr. Irivary, principal at the summer session school where some of the slides were taken, asked to use the presentation at several different teacher, parent, and administrator meetings in the district. One of the principals in attendance at those meetings asked to use the presentation later for teachers and parents in her school. The slide/tape presentation was given to psychology interns at the Veterans Administration Hospital and requests came from that group to use the presentation as part of their training package in schools in which they served as behavior modification consultants. Other examples of requests from school administrators and psychologists could be given.

In summary, the package apparently is technically accurate as judged by the professional community. It is excellent as an introduction to incentives as judged by school administrators. It is fair to good as judged by teachers who already have a background knowledge of the behavior modification literature; and good to excellent as rated by teachers who have limited background and experience with these concepts.

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Appendix A

Sample Abstract

Author: Davison, D.C.

Title: Perceived reward value of teacher-issued reinforcement in relation to student attitude toward teacher, sex and social class background: An application of Newcomb's balance theory.

Source: Unpublished at the time of citation

Site: University of Toledo

Problem Identifiers: 34, 38, 41, 48, 49, 53

I	1
II	3
III	5
IV	9
V	15
VI	19,20
VII	21
VIII	26

Dependent Variables:

"The significance students attached to certain teacher behaviors which were intended to reinforce them, was examined in relation to their attitude toward the teacher, their sex, and social class background. ... These variables were examined in relation to both positive and negative reinforcement... Following Newcomb's Balance Theory, "it was hypothesized that they [students] would attach greater significance to both positive & negative reinforcement dispensed by the liked teacher than by the disliked teacher."

Design:

2 X 2 X 3 analysis of variance of questionnaire results

Independent Variables:

Reinforcing Agent: Teacher

Recipients: 118 male and 138 female 8th grade students from 3 communities in Illinois. "The communities were predominantly white and and all had populations of varying economic backgrounds... The subjects were classified into 3 social class groupings, based on Hollingshead's Two-Factor Index of Social Position. According to this index, there were 37, 107, and 112 students in the sample representing the upper, middle and lower social classes respectively."

Reinforcers: Both positive & negative behaviors on the part of teachers

Setting: Regular school situation

Method: Prior to the main study a questionnaire was developed consisting of typical classroom reinforcing behaviors of teachers. "Items for the questionnaire were provided by 77 8th-grade students who were not part of the sample for the main study. The teacher reinforcing behaviors chosen for items in the questionnaire were those listed most often by respondents.

20 Items were chosen for the final form of the questionnaire, 12 representing positive reinforcement & 8 representing negative reinforcement. In responding to the questionnaire, the subject indicated his feelings about each given reinforcing act in relation to one of two teacher referents, 'most preferred teacher,' & 'least preferred teacher,' The 2 teacher referent conditions under which the questionnaire was administered were separated by 1 week; the order being reversed for 1/2 of the respondents. On each occasion, before responding to the questionnaire, the examinee was asked to select the teacher he most (or least) preferred to have teach him, without identifying the teacher by name, and indicate his attitude toward the teacher on a 5 point descriptive scale. To respond to the items, the students were asked to choose from among 5 statements the 1 most indicative of their feelings about a given reinforcing act in relation to a particular teacher referent.

Upon completion of the questionnaire, the respondents were asked to provide certain personal data which included their sex, age, and information on their parent's occupations and educational backgrounds. The latter information was used with Hollingshead's scale in order to obtain an index of each respondent's social position."

Experimental Monitoring:

The results of the teacher descriptive scale were used merely as an additional means of confirming the student's attitude toward the teacher chosen.

Results:

"Complete data were available for 256 students. Each student had 4 scores, 2 of which provided indices of the significance attached to positive reinforcement dispensed by the "liked" teacher and the "disliked" teacher, and 2 of which provided indices of the significance attached to negative reinforcement dispensed by the 2 respective teachers. Students attached greater significance to positive reinforcement dispensed by liked teachers than by disliked teachers ($p<.001$). Boys attached more reward value to the positive reinforcement that did girls ($p<.05$). There were also significant social class differences ($p<.01$). Middle class students attached the greatest significance to the positive reinforcement, whereas the upper class students attached the least significance to it. The value attached to the positive reinforcement by lower class students was intermediate between that of middle and upper class students, and did not differe significantly from the value attached to the reinforcement by either of the latter two groups.

"The results of the analysis indicated, as predicted, that the students attached less significance to negative reinforcement dispensed by disliked teachers than by liked teachers ($p<.01$). That is, when negative reinforcement originated with a liked teacher, students tended to regard it with more aversion--which is consistent with the spirit in which it was offered--than when it originated with a disliked teacher. There were no significant sex or social class differences in the way students regarded the negative reinforcement."

Conclusions:

"The findings indicated that the attitude of the student toward the teacher may be a significant factor in how he responds to her attempts to influence his behavior through positive & negative reinforcement. This would suggest that many teachers may be handicapped to a certain extent not only in their ability to positively reinforce desired responses but also in their ability to apply psychological sanctions through negative reinforcement.

"The sex differences that were observed in the students' reactions to the positive reinforcement are somewhat more difficult to interpret. In asmuch as sex differences have been noted, it is important that provisions be made in a study such as this to prevent possible confounding due to sex.

"Although a significant difference was noted between 2 of the social classes in their responsiveness to the positive reinforcement, these findings, also, are far from being clear. The relationship between social class and reaction to reinforcement may not be a simple one."

Appendix B

Certificate of Accomplishment
Presented at the End of Part I

Certificate of Accomplishment
in the
Incentive to Learn Initial Training Program

Awarded to:

_____

School Principal: _____

Program Presenter: _____